

Appendix 4C: Information to Support the Cumulative Effects Analysis for Terrestrial Species

4.C Information to Support the Cumulative Effects Analysis for Terrestrial Species

The information presented here is to support the cumulative effects discussion sections presented in Chapter 4 of this incidental take permit application. This information was taken from the Draft EIR/EIS for the Bay Delta Conservation Plan and the Bay Delta Conservation Plan/California WaterFix Partially Recirculated Draft EIR/Supplemental Draft EIS (RDEIR/SDEIS).

The various projects and programs listed in Table 4.C-1 below will have cumulative effects on the existing biological resources of the project area over the next 50 years (the analysis period used for cumulative effects analyses in the NEPA/CEQA compliance documents). The most relevant elements of these projects and programs are their potential to modify land use patterns, modify land management practices, and change the patterns of hydrology and vegetation in the study area. Most of the local, state and federal land use and land management programs that are affecting or will affect the proposed project (PP) are designed to preserve open space and agricultural lands, and to manage the resources of the area for multiple uses, including agriculture, recreation, fish and wildlife habitat, flood protection and water management. The restoration programs will increase primarily wetland and riparian natural communities in the Delta by converting agricultural land or managed wetland. The special-status and common plants and wildlife that rely on wetland and riparian habitats for some stage of their life will benefit from these changes over time. Other species that rely on agricultural land and managed wetland, but do not benefit from wetland and riparian expansion, may decline in the area. On the upland fringes of the Delta, plans exist for small expansions of urban development that would remove primarily agricultural land uses. The management of state- and federally owned wildlife areas, including Grizzly Island, Sherman Island and Yolo Bypass State Wildlife Areas and Stone Lakes NWR, will continue to focus on multiple uses, including wildlife habitat improvement, public access for wildlife viewing, wildlife-friendly agricultural production, and hunting opportunities. Natural habitat will be improved and expanded. The principal changes that are likely to result from the various habitat conservation plans that exist or are in development in the Delta are expected to include restoration and protection of habitats that support the same species addressed in the PP. These changes are expected to result in increases of wetland, grassland and riparian habitats, and a decrease in agricultural lands, and possibly managed wetlands in the Delta.

Implementation of the water management strategies associated with programs listed in Table 4.C-1 would not significantly impact listed fish species in the Delta. These management strategies are designed, in part, to improve aquatic habitat conditions in the Delta for the benefit of special-status fish species. Periodic levee and channel maintenance activities associated with the flood management programs in Table 4.C-1 are likely to result in localized disturbances to valley/foothill riparian, grassland, and tidal perennial aquatic natural communities, and to a lesser extent to tidal brackish and tidal freshwater emergent wetlands. If ongoing levee repair and replacement involves use of reinforcing rock and discouragement of replanting streamside vegetation, there could be a gradual decline in the extent and value of valley/foothill riparian habitat and grassland along minor and major waterways. Several of the water management and transportation projects listed in Table 4.C-1 will entail localized removal of potential habitat for listed species, for the purpose of expanding infrastructure. Most of these activities are on the periphery or just outside of the project area, including the Contra Costa Water District fish screen

and diversion structure modifications, the Delta Mendota Canal/California Aqueduct intertie project, the South Bay Aqueduct improvement project, and California High Speed Rail.

Table 4.C-1. Programs, Projects, and Policies Included In the Cumulative Impact Analysis for Terrestrial Biological Resources

Agency	Program/Project/ Policy	Comments
Alameda County	East Alameda County Conservation Strategy	Approved in 2011. There is little potential for overlap with the PP, depending upon where restoration activities under the PP are sited. The conservation strategy addresses the conservation needs of 19 species. Currently there are no planned conservation activities in the overlap area, so the conservation strategy would not affect listed species in the project area.
California Department of Fish and Wildlife	Fremont Landing Conservation Bank	Established in 2006. Enhances 40 acres of riparian habitat and restores 60 acres of riparian woodlands and sloughs. This bank provides benefits to salmonid species in the Sacramento Valley and many riparian bird, reptile and mammal species that also occupy the Delta.
California Department of Fish and Wildlife	Grizzly Island Wildlife Area Land Management Plan	Estuarine marsh that contains about 15,300 acres of wildlife habitat. Will continue to be managed for wildlife, with an emphasis on waterfowl, threatened and endangered species, and the resident tule elk herd. CDFW actions at this wildlife area will maintain and enhance managed wetland as some of the private wetland is converted to tidal marsh.
California Department of Fish and Wildlife	Lower Sherman Island Wildlife Area Land Management Plan	Ongoing program. Directs habitat and species management on 3,100 acres of marsh and open water. The Plan's goals are to restore and improve marsh and upland habitats for threatened and endangered species, control invasive species and allow for hunting and fishing recreation activities. The Plan has a positive effect on listed species affected by the PP.
California Department of Fish and Wildlife	Private Lands Incentive Program	Includes 29,000 acres of habitat in Tulare Basin, Grasslands, Suisun Marsh, and Sacramento Valley. Encourages development and enhancement of habitat for shorebirds and waterfowl on private lands. This program has beneficial effects on waterfowl and shorebird species in the project area, and encourages wildlife-friendly farming practices.

Agency	Program/Project/ Policy	Comments
California Department of Fish and Wildlife	Restoring Ecosystem Integrity in the Northwest Delta	Originally funded in 2004. Ongoing program. Focused on habitat restoration. Currently concentrating acquisition efforts on 3 specific properties consisting of about 150 acres and baseline monitoring. The project centers on Calhoun Cut and Lindsay Slough in the Cache Slough area. The plan is designed to create a restored, protected corridor extending from Jepson Prairie to Prospect Island, doubling the overall acreage of marsh and riparian habitats, doubling the protected acres of vernal pool/perennial grasslands and increasing the abundance and local distribution of at risk and other native plant and animal species. It is possible that some restoration actions for the PP would be sited in the affected area.
California Department of Water Resources	California Water Action Plan	Initiated in January 2014, this plan lays out a roadmap for the next 5 years for actions that would fulfill 10 key themes. In addition, the plan describes certain specific actions and projects that call for improved water management throughout the state.
California Department of Water Resources	Central Valley Flood Protection Plan	Proposes expansion of flood protection features in the project area. This flood protection improvement project would potentially conflict with any proposal to site giant garter snake habitat restoration near the current floodway.
California Department of Water Resources	Delta Levees Flood Protection Program	Ongoing program. Includes modification to Delta levees within the Sacramento-San Joaquin Delta and portions of the Suisun Marsh, with a focus on western Delta island levees. The project works with 60 reclamation districts and strives to complete levee rehabilitation projects with no net loss of habitat in the Delta. The program has some potential to remove grassland, emergent marsh and riparian habitats in the short-term to strengthen levees. Habitat losses would be offset with protection or restoration actions.
California Department of Water Resources	FloodSAFE California	Promotes public safety through integrated flood management while protecting environmental resources; emphasizes action in the Delta. This program is very broad, but is designed to improve flood safety throughout the state while encouraging sound conservation actions that benefit California's native fish and wildlife and promote wildlife-friendly agricultural practices. The program should not reduce habitat values in the Delta.
California Department of Water Resources	Levee Repair-Levee Evaluation Program	Ongoing program. Upgrading levees along the Sacramento and San Joaquin Rivers and Delta; 1,600 miles of levees included in Central Valley. Most of the program efforts are geotechnical, bathymetric and geomorphic evaluations that have little to no effect on terrestrial wildlife in the study area.

Agency	Program/Project/ Policy	Comments
California Department of Water Resources and MOA Partners	Lower Yolo Restoration Project	In the Cache Slough area, reintroduce tidal action to half of 3,408-acre Yolo Ranch. This project would eliminate existing agricultural land used primarily for grazing, and create tidal marsh for the benefit of special-status Delta anadromous and resident fish species. It will adversely affect some grassland species in favor of tidal marsh and riparian species.
California Department of Water Resources	Dutch Slough Tidal Marsh Restoration Project	Converts 240–840 acres from agricultural uses and grazing to wetland, riparian, and upland habitats. The project also includes development of a recreation center at one end of the property. The restoration will benefit tidal marsh and riparian habitats and species in the western Delta on lands with considerable topographic diversity and little to no land subsidence.
California High Speed Rail Authority	Sacramento to Merced Section of High Speed Rail System	The potential alignment from the Bay Area to Stockton would cross the study area from the west near Tracy and head east to Lathrop, within or parallel to an existing rail corridor. The project has the potential to remove grassland and cultivated lands along existing rights of way near the project area.
California Partners in Flight	Riparian Habitat Joint Venture	Ongoing program. Promotes and supports riparian conservation and enhancement, contributes to flood control and maximizes habitat available to wildlife. Protects and restores riparian areas with intact adjacent upland habitats. The program has a positive influence on the value of riparian habitat.
Central Valley Joint Venture Program	Central Valley Joint Venture	Ongoing program. Strives to protect, restore, and enhance wetlands. Contributes to habitat conservation on a total of 714,000 acres in California. This program has the potential to convert agricultural land to managed wetland or natural wetlands.
Contra Costa County and East Contra Costa County Habitat Conservancy	East Contra Costa County HCP/NCCP	Approved in 2007. Encompasses about 175,000 acres and contains 30,000 acres of preserved land. Purpose is to purchase, restore, and permanently protect large, interconnected and biologically rich blocks of habitat. This HCP/NCCP will result in restoration of native grassland, vernal pools and oak woodland on the southwestern edge of the project area.
Delta Conservancy	California EcoRestore	Initiated in 2015, this program will accelerate and implement a suite of Delta restoration actions for up to 30,000 acres of fish and wildlife habitat by 2020.
Delta Protection Commission	Land Use and Resource Management Plan	Outlines long-term land use requirements for the Sacramento-San Joaquin Delta. This plan directs the long-term protection of agricultural, recreational, and open space uses of the Delta and restricts urban and other types of development that would reduce the value of these uses. The Plan supports protection and restoration of riparian and aquatic habitats in the Delta, and improvement in water quality in Delta channels.

Agency	Program/Project/ Policy	Comments
Placer County Water Agency and U.S. Bureau of Reclamation	Sacramento River Water Supply Study	Feasibility study underway to assess options for providing water supply to future growth in Sacramento-Placer region. Includes potential new surface diversion from the Sacramento River upstream of the Delta.
National Marine Fisheries Service, U.S. Bureau of Reclamation, and Department of Water Resources	Biological Opinion (BiOp) on the Long-Term Operations of the Central Valley Project and State Water Project	Ongoing program. Action area consists of the Oroville Reservoir, Feather River downstream of Oroville, Sacramento River downstream of Feather River, Sacramento-San Joaquin Delta, and adjacent habitats that are dependent on or influenced by waterways. Designed to conserve freshwater, estuarine, nearshore, and offshore aquatic habitats, for the benefit of federally protected fish species. Includes program to increase frequency and duration of Yolo Bypass inundation which may affect terrestrial species including Swainson's hawk, giant garter snake, western yellow-bellied cuckoo and their habitat. This approximately 17,000-20,000 acres of restoration is also included in California EcoRestore (above). In addition Lower Putah Creek enhancements and Lisbon Weir improvements modify habitat with potentially positive and negative impacts to terrestrial species.
Reclamation District 2093	Liberty Island Conservation Bank	Under implementation. Permits and approvals acquired in 2009. Project site is on northern tip of Liberty Island. Over 160 acres in the project site with about 50 acres proposed to be converted to open water channels, emergent marsh wetland, and riparian habitat. Focuses on Delta fish habitat but will restore 2.7 acres of riparian habitat.
Sacramento Area Flood Control Agency, Central Valley Flood Protection Board, and U.S. Army Corps of Engineers	Central Valley Flood Management Program	Ongoing program. Supports flood management planning in Sacramento and San Joaquin Valleys. To be updated every 5 years with first update to be completed in 2017. Combined total of about 2.2 million acres of land within the Central Valley. The program supports improvements in flood management structures, including levees and bypasses. Facilities improvements could result in local removal of vegetation in the study area as flood control facilities are improved and expanded.
San Joaquin Council of Governments	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan	Ongoing program. Approved in 2011. Includes most of San Joaquin County. Assumes 100,000 acres of open land conversion and provides about 100,000 acres of preserves. The Plan is likely to result in conversion of agricultural land to native vegetation, including riparian and grassland areas in the south and east Delta areas. These commitments may place some constraints if DWR proposes to site PP mitigation projects in San Joaquin County.

Agency	Program/Project/ Policy	Comments
Solano County	Solano County Multispecies Habitat Conservation Plan	Establishes habitat conservation goals for Solano County, including approximately 205,000 acres of the study area. This conservation plan focuses on protection and restoration of 13,000–15,000 acres of valley floor grassland and vernal pool habitat for a range of special-status species. Some of the target species are common with the PP, including Swainson’s hawk, giant garter snake, and Mason’s lilaepsis.
U.S. Army Corps of Engineers	CALFED Levee Stability Program	Includes maintaining and improving levee stability in the Delta. Long-term strategy will include ecosystem restoration. Partially funds McCormack-Williamson Tract Restoration.
U.S. Bureau of Reclamation	Delta Mendota Canal/California Aqueduct Intertie	Construction completed in April 2012. Includes construction of a pump and 500-foot pipeline between the two canals near the Jones Pumping Plant. No special-status plant community was affected. The majority of the habitat disturbed was nonnative annual grassland.
U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Department of Water Resources and Department of Fish and Wildlife	San Joaquin River Restoration Program	Initiated in 2006. Ongoing program; 150 miles of the river is planned for restoration, with an emphasis on improving fish passage and riparian habitats within and adjacent to the river’s floodplain. This program does not include lands within the project area, but would provide habitat connections along the San Joaquin River upstream of the project area.
U.S. Bureau of Reclamation and San Luis & Delta Mendota Water Authority	Agricultural Drainage Selenium Management Program Plan	San Joaquin Valley agricultural drainage control program designed to reduce agricultural-related discharges of selenium into the San Joaquin River and south Delta.
U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation and California Department of Fish and Wildlife	San Joaquin Basin Action Plan	Includes a habitat acquisition and wetland enhancement project on 23,500 acres in northern San Joaquin River basin, outside of the project area. This program is focused on supplying adequate water to state and federal refuges and managed wetlands in the San Joaquin Valley for the benefit of migratory waterfowl and other species that are supported by these managed wetlands. These habitats are elements of the larger Central Valley flyway that includes wetlands in the project area.
U.S. Fish and Wildlife Service and Sacramento County	South Sacramento Habitat Conservation Plan	Establishes conservation goals for south Sacramento County, including approximately 43,000 acres of the study area. This plan targets habitat restoration and preservation for 16 species. Habitat improvements are sought for grassland, wetland, agricultural land and riparian areas. There may be some overlap in the demand for land acquisition sites between the PP and the South Sacramento Plan.

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U.S. Fish and Wildlife Service	Recovery Plan for Sacramento-San Joaquin Delta Native Fishes	Released in 1995, the recovery plan includes developing additional shallow water habitat, riparian vegetation zones and tidal marsh to restore wetland habitats for the benefit of 8 native species throughout the Bay-Delta ecosystem. The objective of the plan is to establish self-sustaining populations of the species included in the plan. The estuary is to be managed so that it is better habitat for aquatic life in general and for the fish species of concern in particular.
U.S. Fish and Wildlife Service	Stone Lakes National Wildlife Refuge Comprehensive Conservation Plan	Drafted in 2006. Ongoing program. Directs habitat and species management on approximately 17,600 acres of grassland, agricultural land, managed wetland and riparian habitat. The managed lands of the refuge are a major conservation feature on the eastern boundary of the Delta. Lands within the refuge are owned in fee title or cooperatively managed with landowners through easements. The goals of the refuge are to conserve, restore and manage wetland, grassland, and riparian habitat for the benefit of fish, wildlife and plants, and special-status species; conserve enhance, and restore high quality migrating, wintering and breeding habitat for migrating birds; provide visitors with wildlife-dependent recreation, education and interpretation opportunities; and identify and protect cultural resources.
U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation and California Department of Water Resources	BiOp on the Long-Term Operations of the Central Valley Project and State Water Project (Delta smelt)	Ongoing program. The opinion directs reasonable and prudent actions associated with the ongoing operation of the CVP and SWR, as they relate to the long-term survival of delta smelt. It directs actions associated with reducing entrainment of adult, juvenile and larval smelt in the south Delta pumps; improving habitat for smelt within the Delta by regulating river outflow, restoring or creating at least 8,000 acres of intertidal and related subtidal habitat for delta smelt in the Delta and Suisun Marsh; and initiating a monitoring and reporting program. These actions are currently proposed to be met by implementation of California EcoRestore, described above.
Zone 7 Water Agency and Department of Water Resources	South Bay Aqueduct Improvement and Enlargement Project	Estimated completion in 2012. More than 40 miles of pipelines, a 500 acre-foot reservoir and new pumping facilities will be built. The project is located outside of the project area, but will remove grassland, riparian and related habitats in the hills west of the project area.
California Department of Water Resources, U.S. Bureau of Reclamation, Contra Costa Water District	Los Vaqueros Reservoir Expansion	Project will enlarge Los Vaqueros Reservoir to develop water supplies for environmental water management that supports fish protection, habitat management and other environmental needs in the Delta.

Agency	Program/Project/ Policy	Comments
Placer County Water Agency and U.S. Bureau of Reclamation	Sacramento River Water Supply Study	Feasibility study underway to assess options for providing water supply to future growth in Sacramento-Placer region. Includes potential new surface diversion from the Sacramento River upstream of the Delta.
U.S. Bureau of Reclamation and San Luis & Delta Mendota Water Authority	Agricultural Drainage Selenium Management Program Plan	San Joaquin Valley agricultural drainage control program designed to reduce agricultural-related discharges of selenium into the San Joaquin River and south Delta.
Department of Water Resources	California Water Action Plan	Initiated in January 2014, this plan lays out a roadmap for the next 5 years for actions that would fulfill 10 key themes. In addition, the plan describes certain specific actions and projects that call for improved water management throughout the state.
California Water Commission	Water Storage Investment Program	This bond program includes \$2.7 billion for public benefits of water storage projects that provide measurable benefits to the Delta ecosystem or its tributaries. The Water Storage Investment Program will fund the public benefits, which are defined as ecosystem improvements, water quality improvements, flood control benefits, emergency response, or recreational purposes that result from eligible water storage projects. Operations of these projects may affect operations of the PP